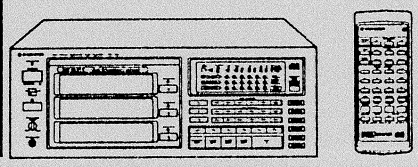
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2205

MULTI-PLAY COMPACT DISC PLAYER

PD-TM1

PD-TM1 HAS THE FOLLOWING:

Type	Power Requirement	Remarks
KU	AC 120V only	
KC	AC 120V only	
HEM	AC 220V-230V, AC 230V-240V (switchable)*	
HPW	AC 220V-230V, AC 230V-240V (switchable)*	
SD	AC 110V, 120V-127V, 220V, 240V (switchable)	

*Change the position of the jumper wire of MAIN board assembly.

- **This manual is applicable to the KU, KC, HEM,HPW and SD types.**
- **As to the KC, HEM, HPW and SD types, refer to pages 84.**
- **As to the mechanism description, refer to the PD-TM1 service guide (ARP2282).**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 9120 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

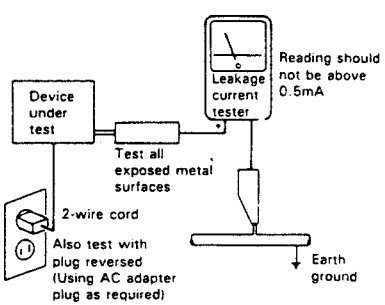
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSATEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

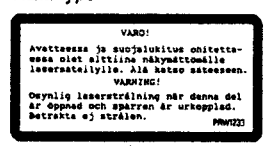
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

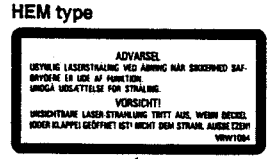
LASER
Picture 1
Warning sign for laser radiation

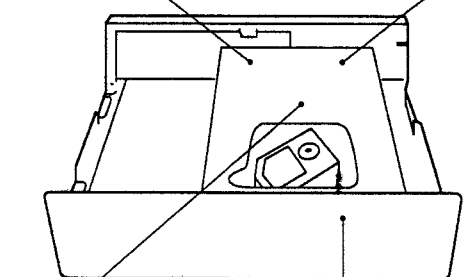
LABEL CHECK (MULTI MAGAZINE type)

HEM type


VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

HEM type





HEM type

HEM type

Additional Laser Caution

1. Laser Interlock Mechanism
The ON/OFF (ON : low level, OFF : high level) status of the LPS1 and LPS2 signals of Clamp switch(S102) for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the LPS1 signal is not OFF(high level) and LPS2 signal is not ON (low level)(clamped state).
Thus, interlock will no longer function if the LPS2 signal of Clamp switch(S102) is deliberately shorted to GND.
Also, in the test mode *, the interlock mechanism does not operate too.
Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

*: Refer to page 36.

2. EXPLODED VIEWS AND PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

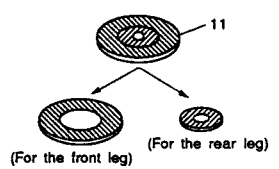
2.1 EXTERIOR

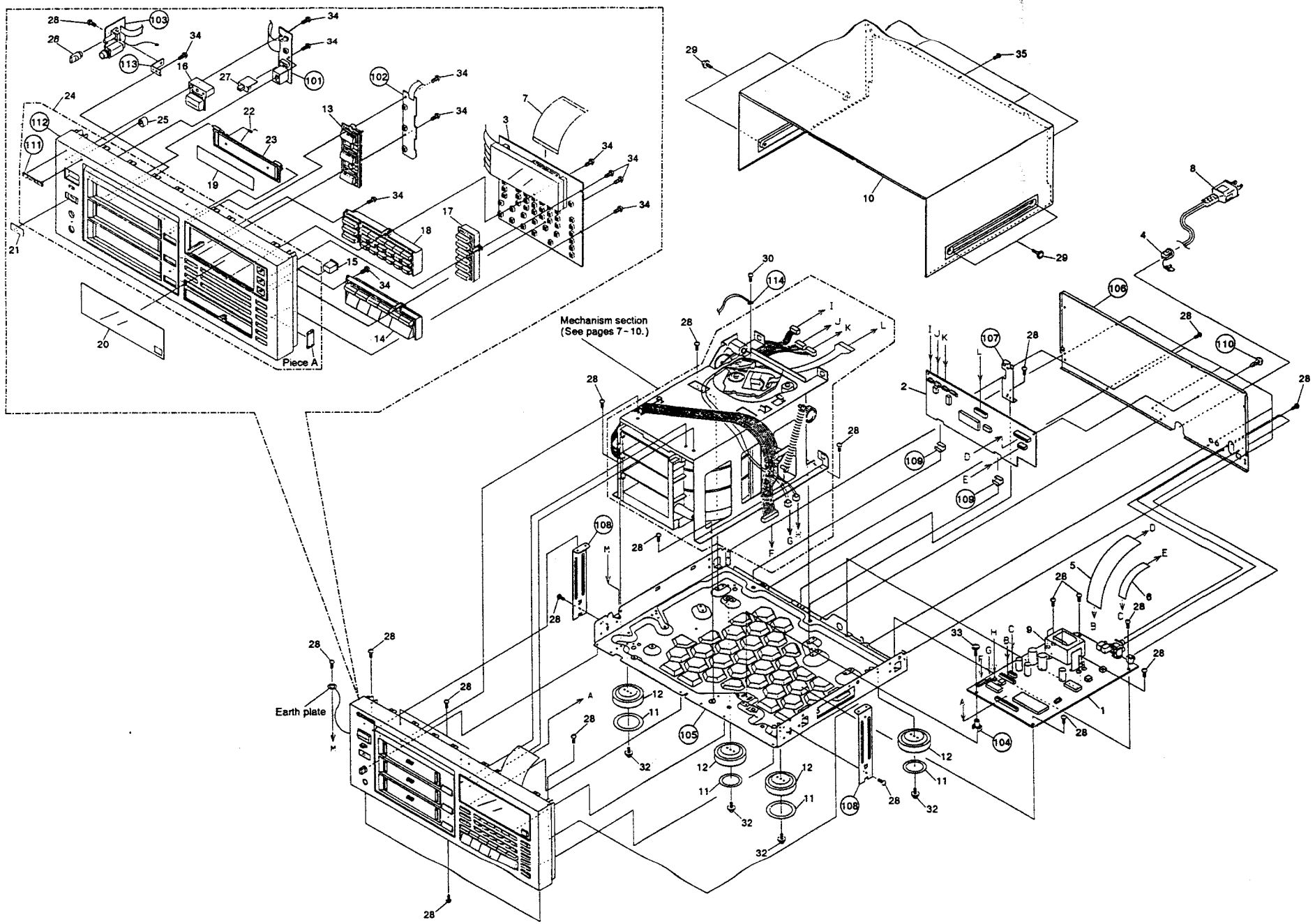
Parts List of Exterior

Mark	No.	Description	Part No.
◉	1	Main board assembly	PWZ2057
◉	2	Servo board assembly	PWZ2087
◉	3	Function board assembly	PWZ2081
⚠	4	Strain relief	CM22-C
	5	Flexible cable(22P)	PDD1088
	6	Flexible cable(9P)	PDD1089
	7	Flexible cable(36P)	PDD1090
⚠	8	AC power cord	PDG1015
⚠	9	Power transformer(AC120V)	PTT1175
	10	Bonnet	PYY1150
	11*	Stopper	PNM1070
	12	Insulator	PNW1263
	13	Eject button	PAC1555
	14	Operation button	PAC1557
	15	Auto level button	PAC1559
	16	Power button	PAC1569
	17	Program button	PAC1575
	18	Track button	PAC1576
	19	Door name plate	PAM1461
	20	Display window	PAM1474
	21	Sensor window	PAM1475
	22	Door spring	PBH1022
	23	Door BK	PNW1894
	24	Function panel assembly	PEA1142
	25	LED lens	PNW2019
	26	Headphone knob	RAC1366
	27	Slide knob	RAC1428
	28	Screw	BBZ30P060FCC
	29	Screw	FBT40P080FZK
	30	Screw	IBZ30P050FZK
	31	Screw	IBZ30P060FCC
	32	Screw	IBZ30P100FCC
	33	Screw	IBZ30P180FMC
	34	Screw	PPZ30P100FMC
	35	Screw	BBZ30P080FCC

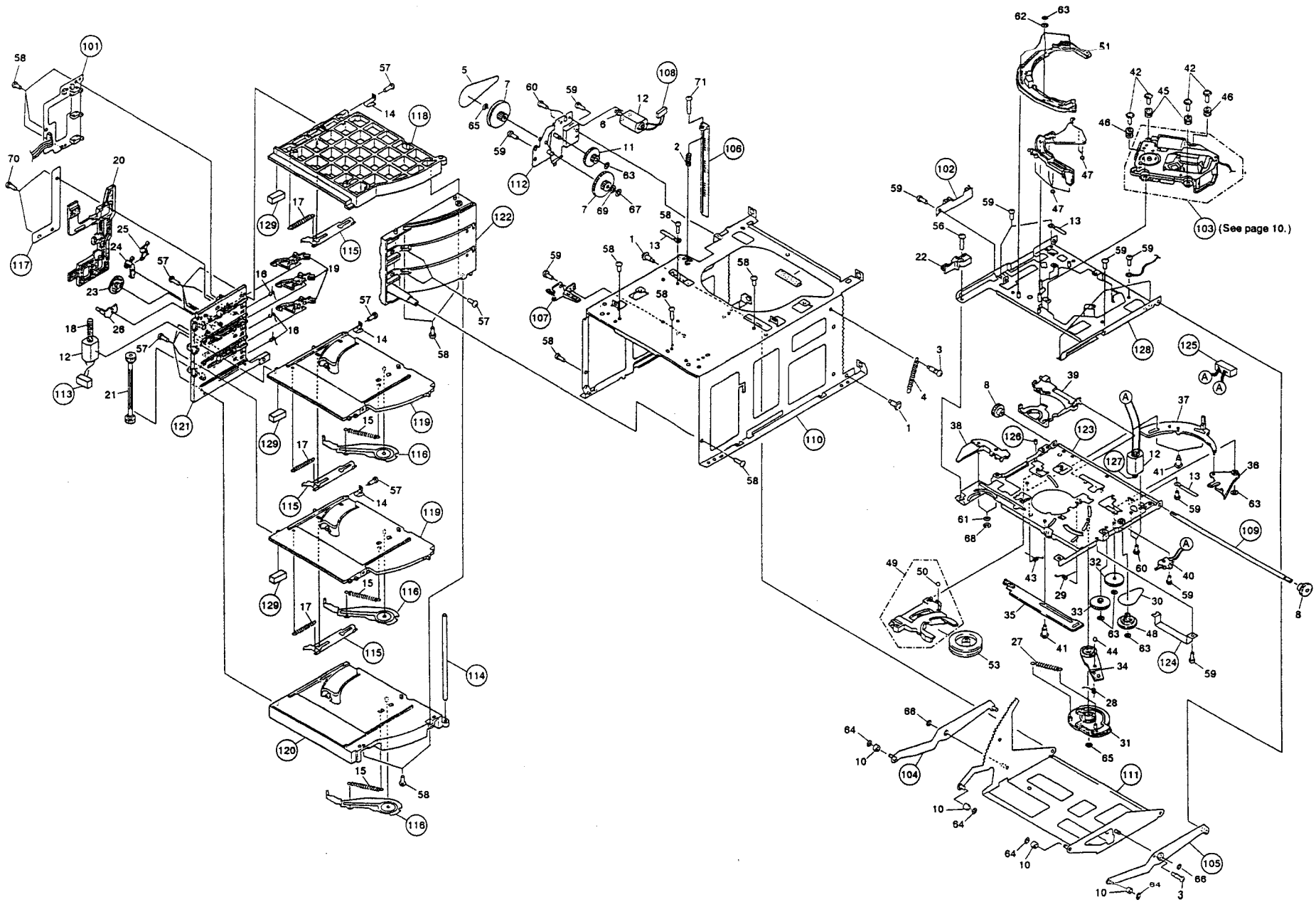
Mark	No.	Description	Part No.
	101	Power switch board assembly	
	102	Sub function board assembly	
	103	Headphone board assembly	
	104	P.C.B mold	
	105	Under base	
	106	Rear base	
	107	P.C.B angle	
	108	Side angle	
	109	P plate holder	
	110	P.C.B holder	
	111	PIONEER badge	
	112	Function panel	
	113	HP angle	
	114	Styling rod	

* The stopper consist of the big ring part and the small ring part. If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.




Mechanism section
(See pages 7 - 10.)
Piece A
Earth plate

2.2 MECHANISM SECTION



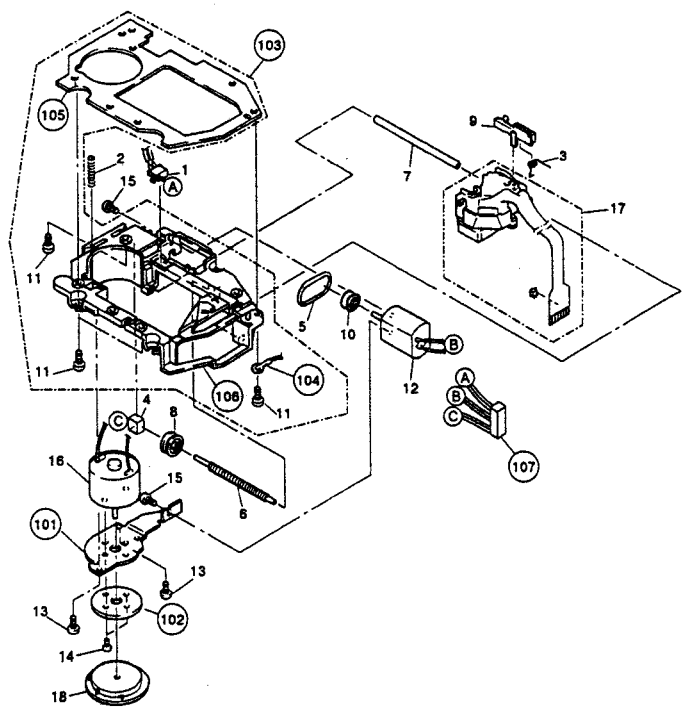
Parts List of Mechanism section

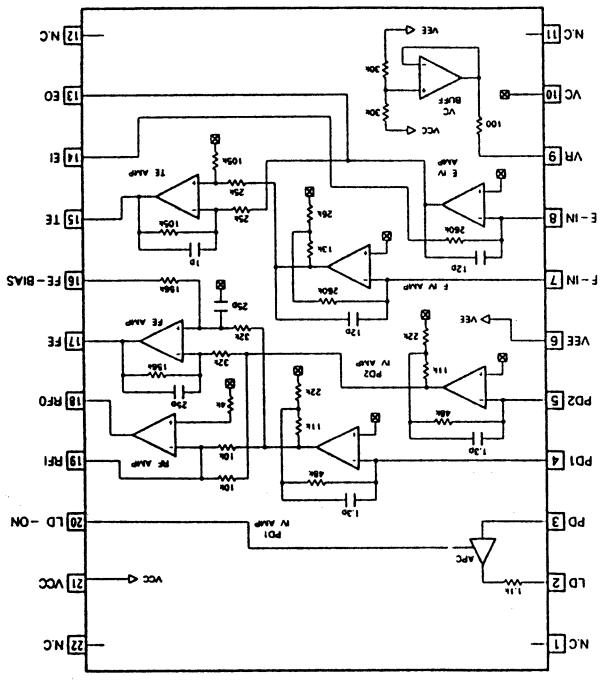
Mark	No.	Description	Part No.
	1	Link screw	DBA1023
	2	Sensor spring	DBH1102
	3	Select screw	PBA1051
	4	Select spring	PBH1116
	5	Belt	PEB1154
	6	Motor pulley	PNW1634
	7	Gear pulley	PNW1960
	8	Synchro gear	PNW1962
	9	Drive gear	PNW2059
	10	Roller	PNW1967
	11	Gear 1	PNW2060
	12	Motor (DISC SELECT, LOADING, EJECT)	PXM1002
	13	Cord clamper	RNH-184
	14	Holder spring	DBK1028
	15	Eject spring	PBH1115
	16	Lock spring	PBH1117
	17	SM spring	PBH1015
	18	Worm	PNW1220
	19	Lock lever	PNW1956
	20	Eject plate	PNW1957
	21	Synchro gear	PNW1958
	22	Select lever	PNW1959
	23	Worm cam	PNW1961
	24	SW lever A	PNW1964
	25	SW lever B	PNW1965
	26	Drive shaft	PNW1969
	27	Spring	PBH1124
	28	Tension spring	PBH1123
	29	Clamper spring B	DBH1120
	30	Belt	DEB1104
	31	Main gear	DNK1568
	32	Gear A	DNK1569
	33	Gear B	DNK1570
	34	Drive lever	DNK1571
	35	Drive plate	DNK1572
	36	Clamper lever	DNK1573
	37	Clamper cam	DNK1574
	38	Turn drive lever	DNK1577
	39	Clamper holder B	DNK1581
	40	Lever switch (S102) [LOADING POSITION (LPS1, LPS2)]	DSK1003
	41	Screw	PBA-125
	42	Floating screw	PBA1055
	43	Clamper spring T	PBH1016
	44	Steel ball ϕ 4	PBP-001
	45	Floating rubber	PEB1014
	46	Floating rubber	PEB1132
	47	Cushion A	PED1001
	48	Gear pulley	PNW1095
	49	Clamper holder T	PNW1107
	50	Steel ball ϕ 3	PBP-009
	51	Clamp cam	PNW1110
	52	Upper tray	PNW1111
	53	Clamper	PNW1448
	54		.....
	55	Screw	BMZ26P050FMC
	56	Screw	BMZ26P120FMC
	57	Screw	BPZ20P080FZK
	58	Screw	BBZ30P080FMC
	59	Screw	BSZ26P040FMC
	60	Screw	PMZ20P030FMC
	61	Washer	WA31D054D025
	62	Washer	WA31D054D050
	63	Washer	WT26D047D025
	64	Washer	WT26D054D050
	65	Washer	WT31D054D025
	66	Washer	WT31D054D050
	67	Washer	WT41D065D025
	68	E ring	Z39-010
	69	Washer	PLA1093
	70	Screw	BPZ20P060FMC
	71	Screw	PBA1059
	101	Mechanism board assembly	
	102	Sensor board assembly	
	103	Servo mechanism assembly M	
	104	Link L	
	105	Link R	
	106	Sensor plate	
	107	Sensor holder	
	108	2mm pitch connector assembly (2P)	
	109	Synchre shaft	
	110	Main chassis	
	111	Link plate	
	112	Gear angle	
	113	2mm pitch connector assembly (2P)	
	114	Guide bar	
	115	SM select	
	116	Eject lever	
	117	Plate holder	
	118	Top guide	
	119	Center guide	
	120	Bottom guide	
	121	Side guide L	
	122	Side guide R	
	123	Sub chassis	
	124	Hold plate	
	125	2mm pitch connector assembly (5P)	
	126	Rubber tube	
	127	Motor pulley	
	128	Upper chassis	
	129	Rubber	

2.3 SERVO MECHANISM ASSEMBLY M

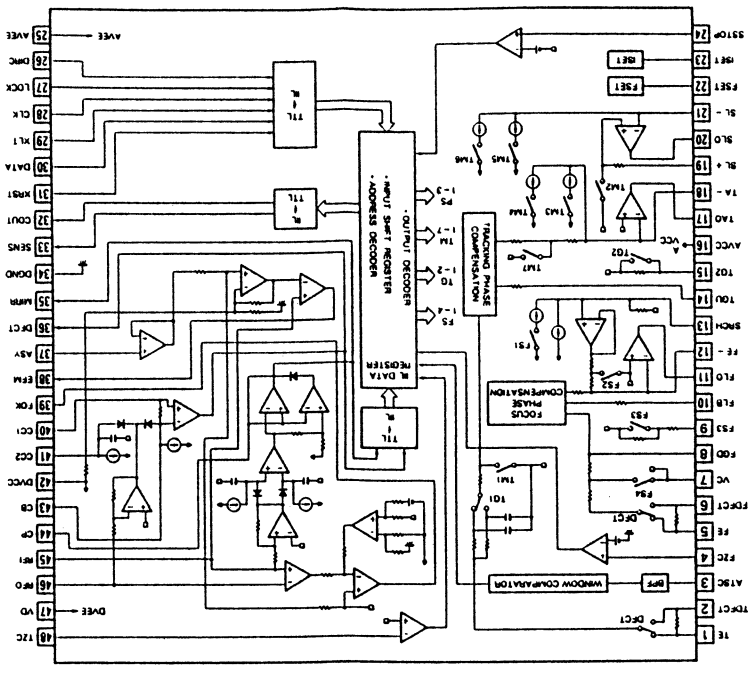
Parts List of Servo mechanism assembly M

Mark	No.	Description	Part No.
	1	Push switch (INSIDE)	DSG1014
	2	Earth spring	PBH1009
	3	Drive spring	PBH1084
	4	Plate spring	PBK1057
	5	Belt	PEB1072
	6	Drive screw	PLA1003
	7	Guide bar	PLA1071
	8	Pulley	PNW1066
	9	Half nut	PNW1605
	10	Motor pulley	PNW1634
	11	Screw	PBZ30P080FMC
	12	D.C. motor (CARRIAGE)	PXM1013
	13	Screw	BPZ20P080FZK
	14	Screw	JFZ20P040FMC
	15	Screw	PMZ20P030FMC
	16	D.C. motor assembly (SPINDLE) (with oil)	PEA1028
	17	Pickup assembly	PEA1030
	18	Disc table assembly	PEA1035
	101	Motor base	
	102	Yoke M	
	103	Mechanism base assembly T	
	104	Earth lead unit	
	105	Mechanism base	
	106	Mechanism chassis	
	107	Connector assembly (6P)	

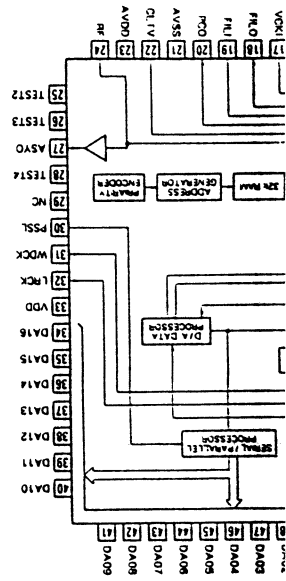




● IC101:CXA1471S



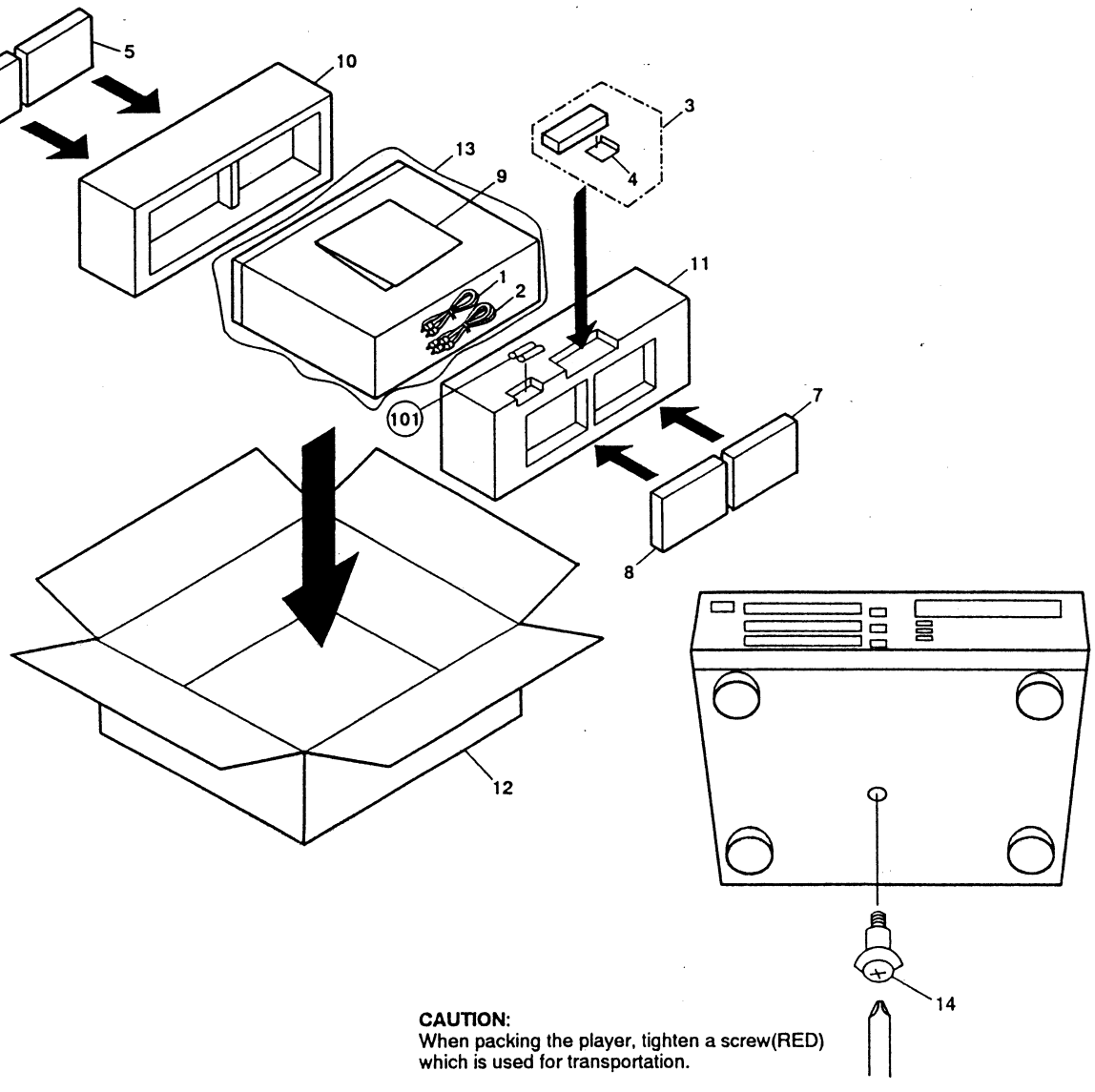
● IC151:CXA1372S



3. PACKING

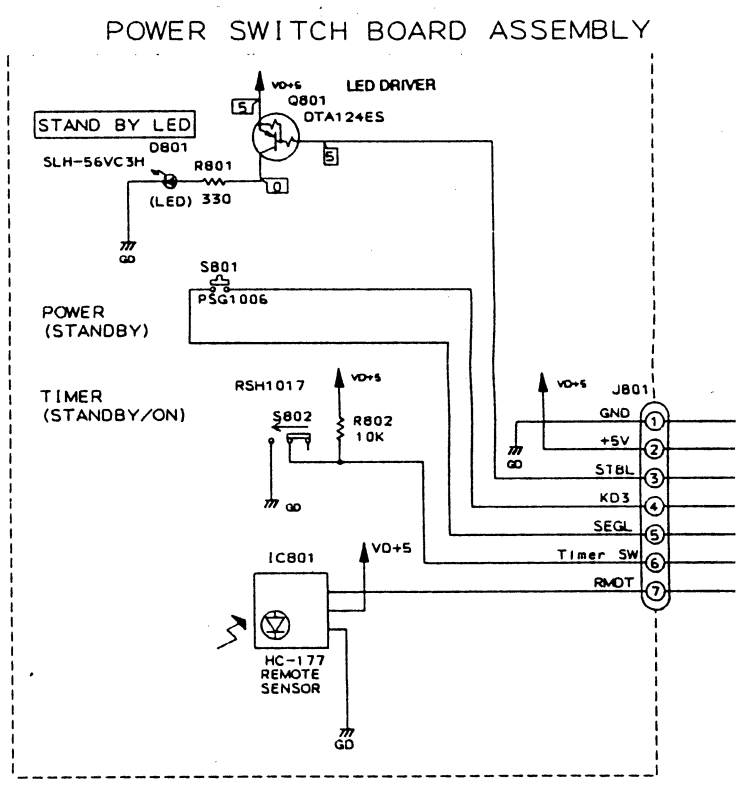
Parts List

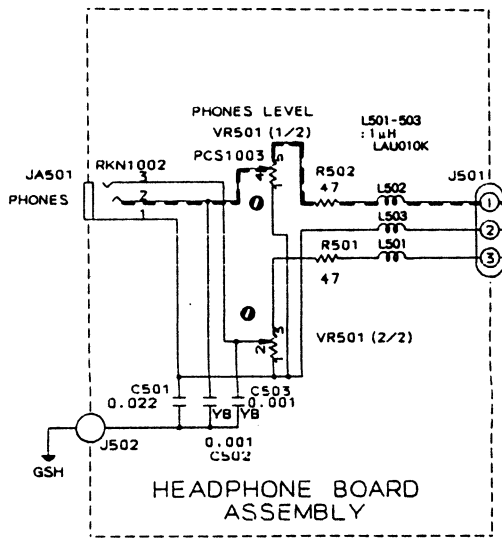
Mark	No.	Description	Part No.
	1	Connection cord with mini plug	PDE-319
	2	Connection cord with pin plug	PDE1001
	3	Remote control unit	PWW1065
	4	Battery cover	PZN1001
	5	Single magazine assembly	PXA1043
	6	Magazine assembly (RED)	PXA1373
	7	Magazine assembly (BLUE)	PXA1374
	8	Magazine assembly (WHITE)	PXA1375
	9	Operating instructions (English)	PRB1146
	10	Protector F	PHA1161
	11	Protector R	PHA1162
	12	CD packing case	PHG1631
	13	Mirror mat sheet	Z23-031
	14	Screw (RED)	PBA1060
		PP case (For Magazine assembly)	PYY1141
	101	Dry cell battery (R03, AAA)	

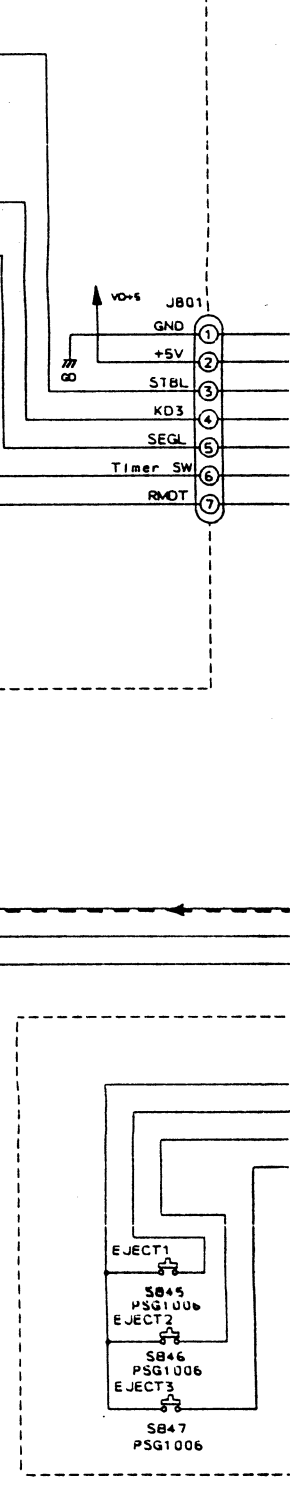


CAUTION:
When packing the player, tighten a screw(RED) which is used for transportation.

4. SCHEMATIC DIAGRAM



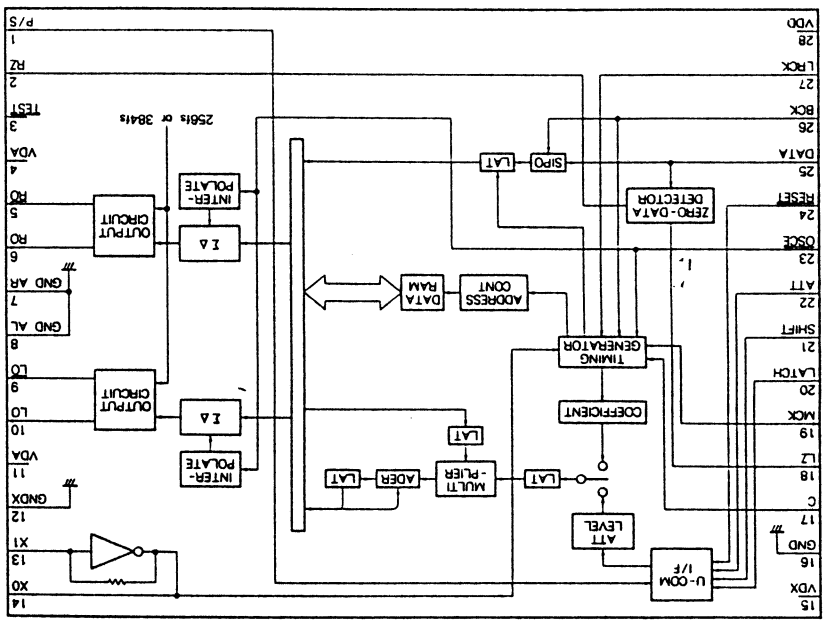




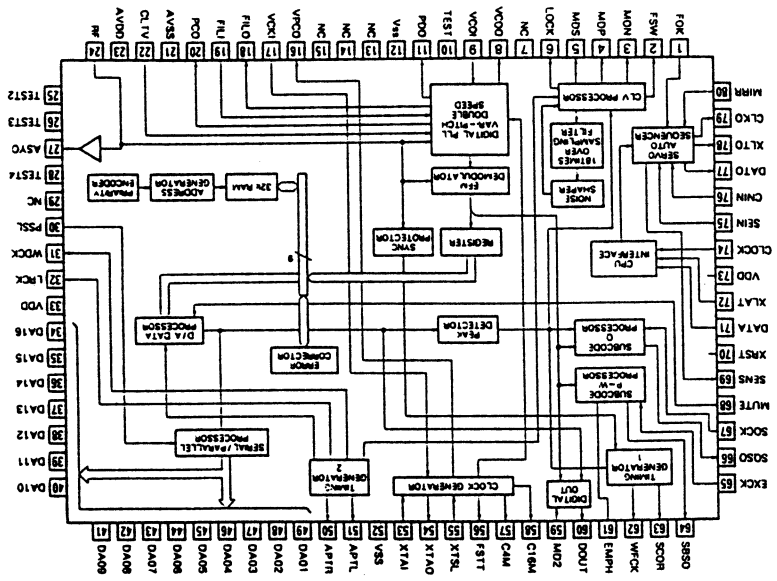
:Signal

IC Block Diagrams

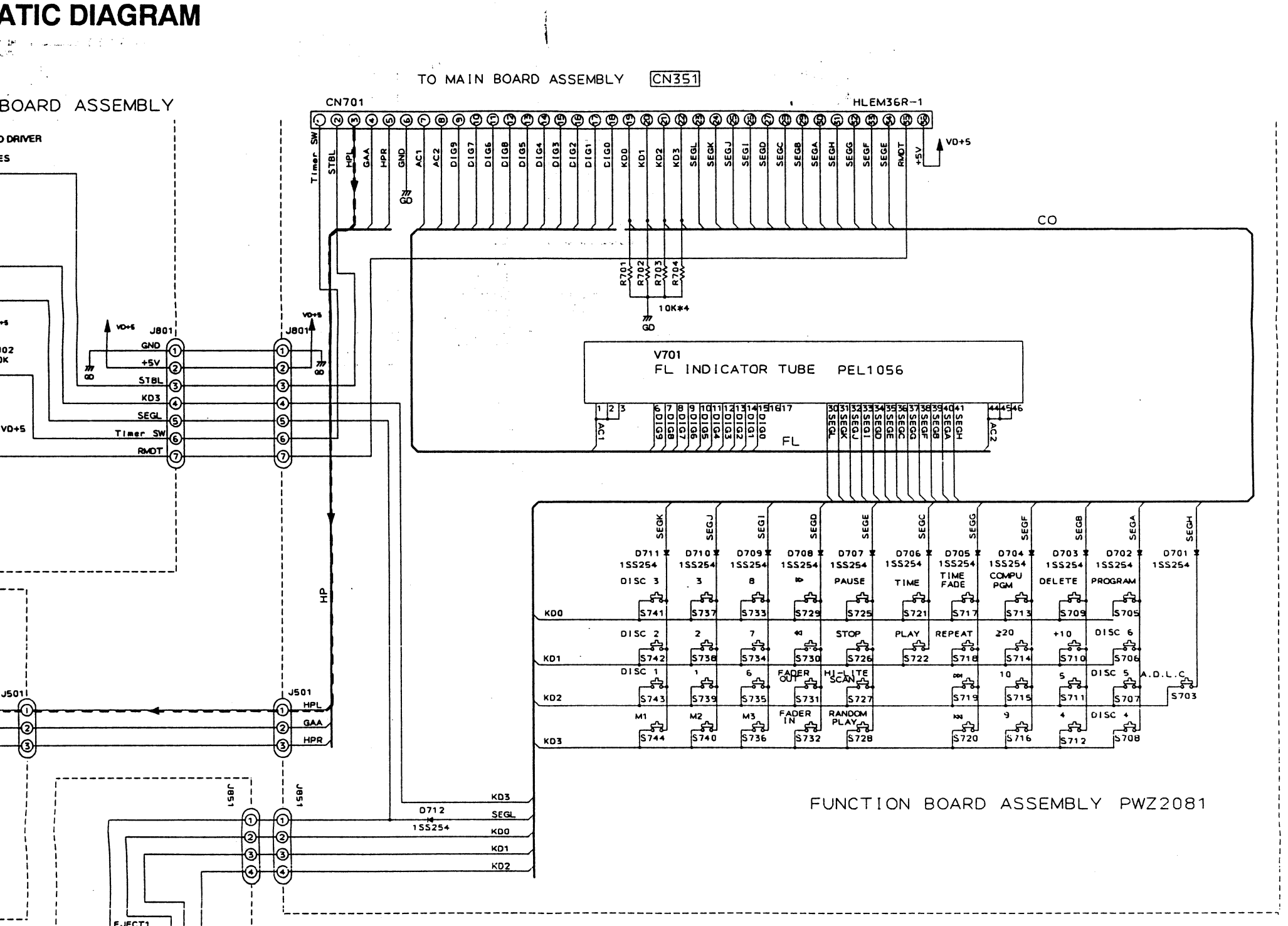
● IC401:PD2026A



● IC301:CXD2500Q



SCHEMATIC DIAGRAM



:Signal Route

1. RESISTORS:
Indicated in Ω, 1/4W, 1/6W and 1/8W, ± 5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ± 1%, (G); ± 2%, (K); ± 10%, (M); ± 20% tolerance.

2. CAPACITORS:
Indicated in capacity (μF) /voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
;DC voltage (V) at play state.
⇦ mA;DC current at play state.
;Value in ( ) is DC current at stop state.

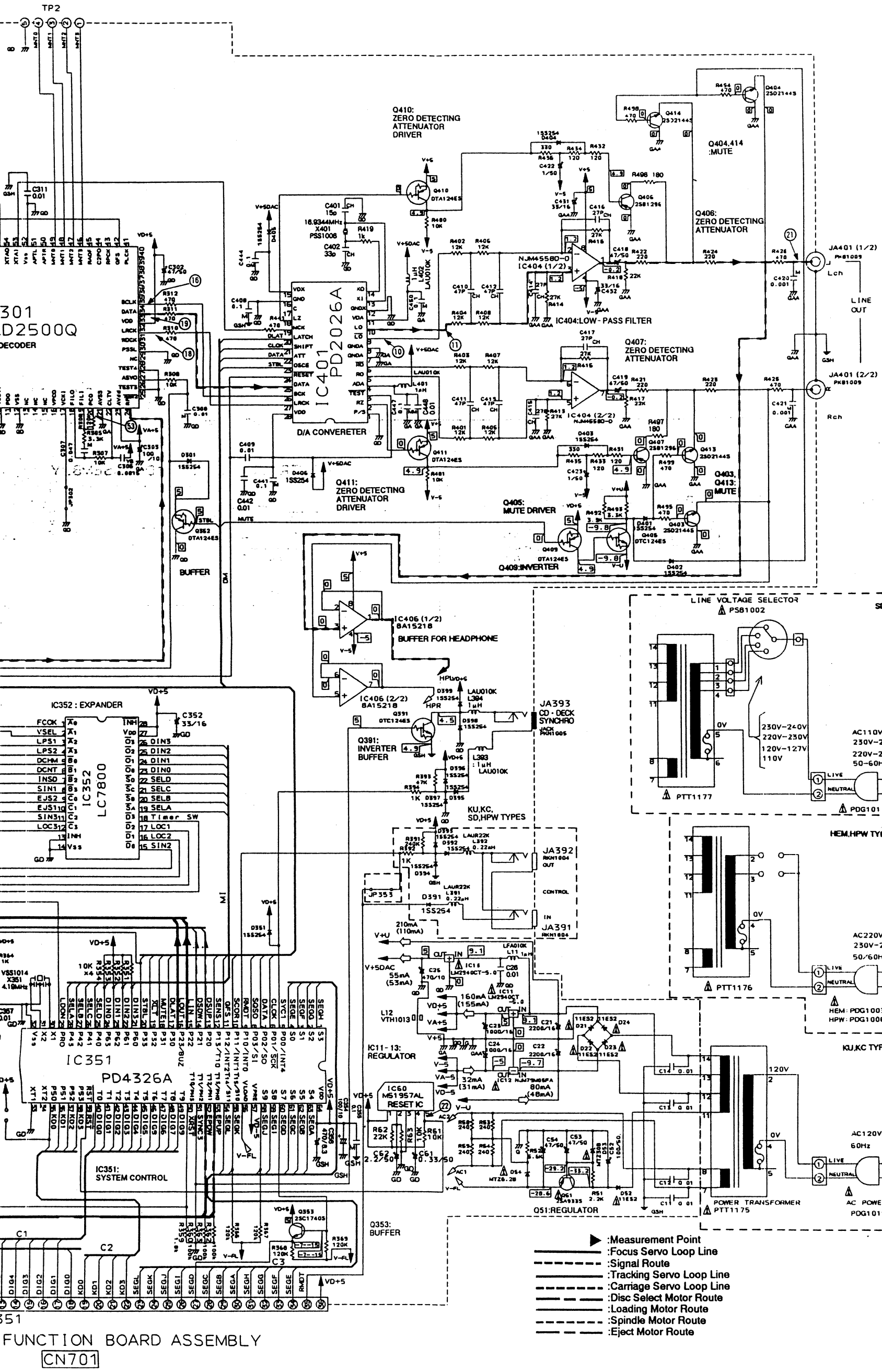
4. OTHERS:
➡; Signal route.
⊘; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES:(The underlined indicates the switch position)
OUT SIDE OF P.C.BOARD ASSEMBLY
INSIDE SWITCH
S102:LOADING POSITION(LPS1, LPS2)
SENSOR BOARD ASSEMBLY
S901:DISC POSITION(DCHM, DCNT)
MECHANISM BOARD ASSEMBLY
S951:EJS2
S952:EJS1
S953:LCD1
S954:SIN1
S955:SIN2
S956:LCD2
S957:SIN3
S958:LCD3
POWER SWITCH BOARD ASSEMBLY
S801:POWER(STANDBY)
S802:TIMER(STANDBY/ON)
SUB FUNCTION BOARD ASSEMBLY
S845:MAGAZINE [1]
S846:MAGAZINE [2] EJECT(▲)
S847:MAGAZINE [3]

FUNCTION BOARD ASSEMBLY
S703:ADLC
S705:PROGRAM
S706:6
S707:5 DISC NUMBER
S708:4
S709:DELETE
S710:+10
S711:5 TRACK NUMBER
S712:4
S713:COMPU PGM
S714 ≧ 20
S715:10 TRACK NUMBER
S716:9
S717:TIME FADE
S718:REPEAT
S719: ▷▷| TRACK SEARCH
S720: |◁◁
S721:TIME
S722:PLAY(◁)
S725:PAUSE(▯▯)
S726:STOP(□)
S727:HI-LITE SCAN
S728:RANDOM PLAY
S729: ▷▷ MANUAL SEARCH
S730: ◁◁
S731:OUT(↖) AUTO FADER
S732:IN (↗)
S733:8
S734:7 TRACK NUMBER
S735:6
S736:MAGAZINE [3]
S737:3
S738:2 TRACK NUMBER
S739:1
S740:MAGAZINE [2]
S741:3
S742:2 DISC NUMBER
S743:1
S744:MAGAZINE [1]

3 MAGAZINE MECHANISM ASSEMBLY



IC101 (CXA1471S)

Pin No.	Voltage	Pin No.	Voltage
1	0	12	0
2	2.9	13	-0.9
3	-4.7	14	-0.7
4	0	15	0
5	0	16	0
6	-5	17	0
7	0	18	0.8
8	0	19	0
9	0	20	5
10	0	21	5
11	0	22	0

IC151 (CXA1372S)

Pin No.	Voltage	Pin No.	Voltage
1	0	25	-5
2	0	26	5
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	5
10	0	34	0
11	1	35	0
12	0	36	-5
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5
16	5	40	-1.5
17	0	41	-1.7
18	0	42	5
19	0	43	-0.7
20	0.2-0.8	44	-1.8
21	0	45	0
22	-4	46	0.8
23	1.3	47	-5
24	0	48	0

IC301 (CXD2500Q)

Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	3
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0-0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1	53	2.5
14	0.9-1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3-4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1-3
30	0	70	5
31	1.3-2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	-5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC351 (PD4326A)

Pin No.	Voltage	Pin No.	Voltage
1	-12.8	33	0
2	-15--20	34	4.8
3	-8--23	35	0
4	-8--23	36	0
5	5	37	0
6	5	38	0
7	5	39	5
8	3.9-4.7	40	-1.8
9	5	41	-1.2
10	5	42	-25.7
11	5	43	-25.7
12	4.7	44	-25.7
13	5	45	-25.7
14	5	46	-25.7
15	5	47	-25.7
16	5	48	-25.7
17	5	49	-25.7
18	0	50	4.7
19	5	51	5
20	5	52	5
21	5	53	5
22	5	54	-6
23	0	55	-3--7
24	0	56	-28.9
25	5	57	-5
26	1.8-2.1	58	-9.5
27	5	59	-10.5
28	5	60	-8--23
29	5	61	-2--8
30	2.3	62	-2--8
31	2.5	63	-2--23
32	0	64	5

IC352 (LC7800)

Pin No.	Voltage	Pin No.	Voltage
1	5	15	5
2	5	16	5
3	0	17	0
4	5	18	5
5	5	19	5
6	5	20	5
7	5	21	0
8	0	22	5
9	0	23	0
10	0	24	0
11	5	25	5
12	5	26	5
13	0	27	5
14	0	28	5

IC401 (PD2026A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	0	16	0
3	4.5	17	4.5
4	5	18	0
5	2.2	19	1.6
6	2.4	20	5
7	0	21	5
8	0	22	5
9	2.4	23	5
10	2.2	24	5
11	5	25	2.5
12	0	26	2.5
13	2.3	27	2.5
14	2.4	28	4.5

IC60 (M51957AL)

Pin No.	Voltage
1	5
2	1.6
3	0
4	1.25
5	5

FUNCTION BOARD ASSEMBLY

CN701

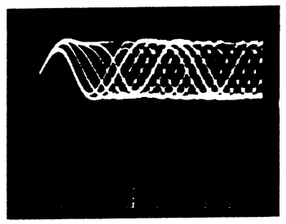
Waveforms

Note: The encircled numbers denote measuring points in the schematic diagram.

*1 50T-JUMP: After switching to the pause mode, press the manual search key.
*2 FOCUS-IN: Press the key without loading a disc.

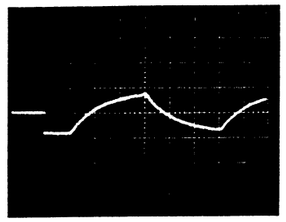
*3 POWER ON : Plug AC cord into AC wall socket.
*4 POWER OFF: Unplug AC cord from AC wall socket.

(2) TP1-Pin 1: PLAY MODE
(RF)
500mV/div 500nsec/div



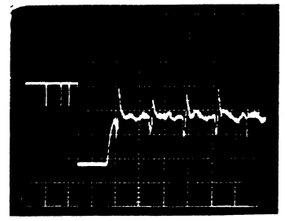
– GND

(5) IC202-Pin 4 : FOCUS-IN (*2) MODE
(FODR)
1V/div 200msec/div



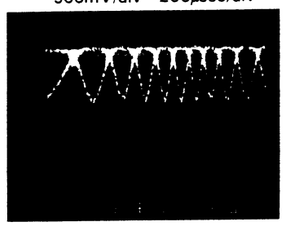
– GND

(7) IC201-Pin 3:TRACK SEARCH MODE
(SPDR)
2V/div 50msec/div



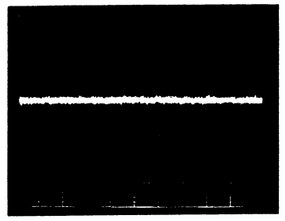
– GND

(2) TP1-Pin 1: TRACK SEARCH MODE
(RF)
500mV/div 200μsec/div



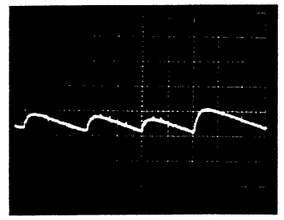
– GND

(5) IC202-Pin 4: PLAY MODE
(FODR)
1V/div 1msec/div



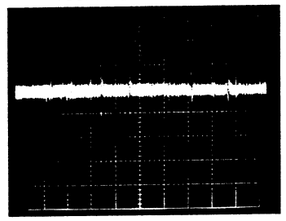
– GND

(8) IC202-Pin 9: PLAY MODE
(CADR)
1V/div 2S/div



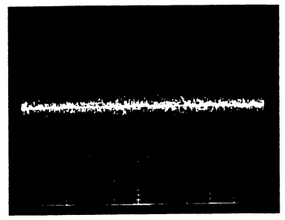
– GND

(3) TP1-Pin 6: PLAY MODE
(FOER)
100mV/div 10msec/div



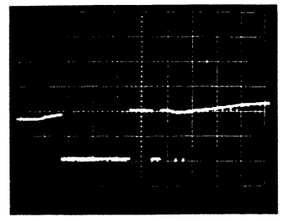
– GND

(6) IC202-Pin3:PLAY MODE
(TRDR)
500mV/div 1msec/div



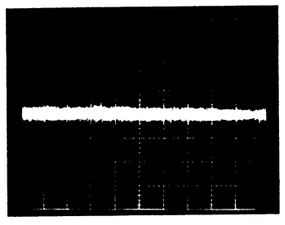
– GND

(8) IC202-Pin 9: TRACK SEARCH MODE
(CADR)
2V/div 200msec/div



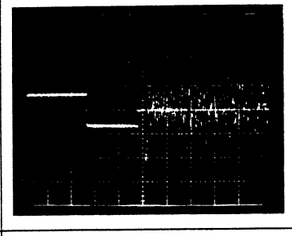
– GND

(4) TP1-Pin 2: PLAY MODE
(TRER)
1V/div 10msec/div



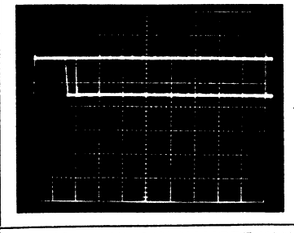
– GND

(6) IC202-Pin 3:50T-JUMP (*1) MODE
(TRDR)
500mV/div 1msec/div



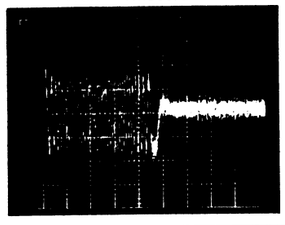
– GND

(9) IC151-Pin 38: PLAY MODE
(EFM)
2V/div 500nsec/div



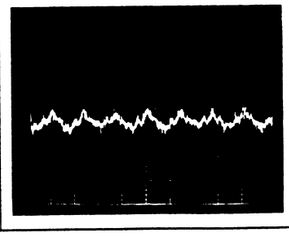
– GND

(4) TP1-Pin 2: 50T-JUMP (*1) MODE
(TRER)
1V/div 1msec/div



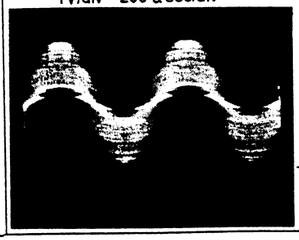
– GND

(7) IC201-Pin 3:PLAY MODE
(SPDR)
1V/div 50msec/div



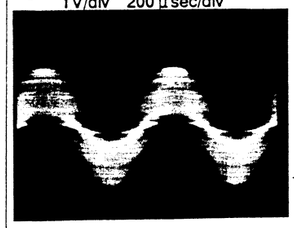
– GND

(10) IC401-Pin 9:PLAY MODE (1kHz)
(LO) (D/A DATA OUT)
1V/div 200 u sec/div



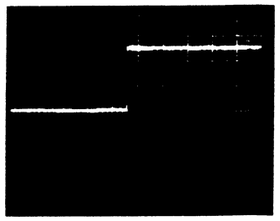
– GND

(11) IC401-Pin 10:PLAY MODE (1kHz)
(LO) (D/A DATA OUT)
1V/div 200 μsec/div



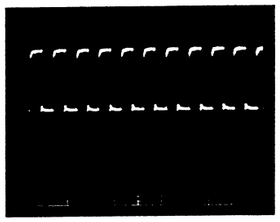
– GND

(22) IC60-Pin 5: POWER ON (*3)
(RST)
2V/div 100msec/div



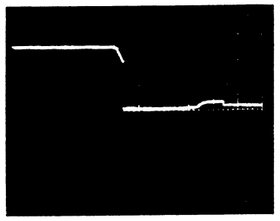
– GND

(16) IC301-Pin 35: PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div



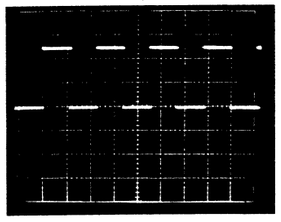
– GND

(22) IC60-Pin 5: POWER OFF (*4)
(RST)
2V/div 100msec/div



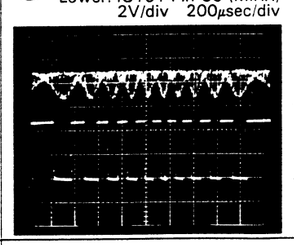
– GND

(18) IC301-Pin 32: PLAY MODE (1kHz)
(LRCK)
2V/div 10μsec/div



– GND

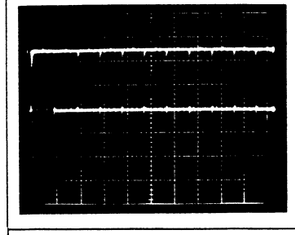
(23) : TRACK SEARCH MODE
Upper: TP1-Pin 1 (RF) 1V/div
Lower: IC151-Pin 35 (MIRR)
2V/div 200μsec/div



– GND

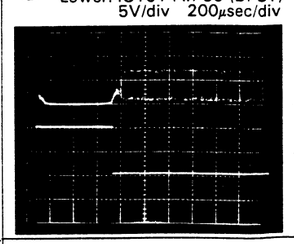
– GND

(19) IC301-Pin 34: PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div



– GND

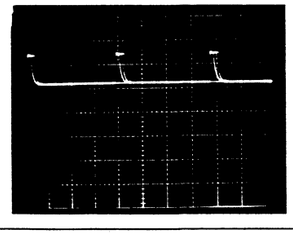
(24) : PLAY MODE
Upper: TP1-Pin 1 (RF) 1V/div
Lower: IC151-Pin 36 (DFCT)
5V/div 200μsec/div



– GND

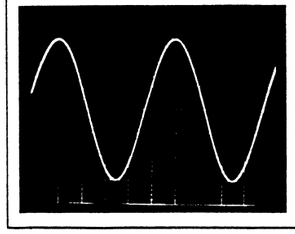
– GND

(33) IC301-Pin 4: PLAY MODE
(MDP)
2V/div 2μsec/div



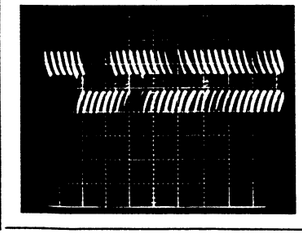
– GND

(21) Pin -OUTPUT: PLAY MODE (1kHz)
1V/div 200μsec/div



– GND

(53) IC301-Pin 20: PLAY MODE
(PCO)
2V/div 10μsec/div



– GND

5. P.C.BOARDS CONNECTION DIAGRAM

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode	SA		Styrol capacitor
			NP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
					Resistor
		Inductor			
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

IC101 (CXA1471S) * 1

Pin No.	Voltage	Pin No.	Voltage
1	0	12	0
2	2.9	13	-0.9
3	-4.7	14	-0.7
4	0	15	0
5	0	16	0
6	-5	17	0
7	0	18	0.8
8	0	19	0
9	0	20	5
10	0	21	5
11	0	22	0

IC151 (CXA1372S) * 2

Pin No.	Voltage	Pin No.	Voltage
1	0	25	-5
2	0	26	5
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	5
10	0	34	0
11	1	35	0
12	0	36	-5
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5
16	5	40	-1.5
17	5	41	-1.7
18	0	42	5
19	0	43	-0.7
20	0.2-0.8	44	-1.6
21	0	45	0
22	-4	46	0.8
23	1.3	47	-5
24	0	48	0

IC301 (CXD2500Q) * 4

Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0-0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1	53	2.5
14	0.9-1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3-4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1-3
30	0	70	5
31	1.3-2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC351 (PD4326A) * 3

Pin No.	Voltage	Pin No.	Voltage
1	-12.8	33	0
2	-15- -20	34	4.6
3	-8- -23	35	0
4	-8- -23	36	0
5	5	37	0
6	5	38	0
7	5	39	5
8	3.9-4.7	40	-1.8
9	5	41	-1.2
10	5	42	-25.7
11	5	43	-25.7
12	4.7	44	-25.7
13	5	45	-25.7
14	5	46	-25.7
15	5	47	-25.7
16	5	48	-25.7
17	5	49	-25.7
18	0	50	4.7
19	5	51	5
20	5	52	5
21	5	53	5
22	5	54	-6
23	0	55	-3- -7
24	0	56	-28.9
25	5	57	-5
26	1.8-2.1	58	-9.5
27	5	59	-10.5
28	5	60	-8- -23
29	5	61	-2- -8
30	2.3	62	-2- -8
31	2.5	63	-2- -23
32	0	64	5

IC352 (LC7800) * 5

Pin No.	Voltage	Pin No.	Voltage
1	5	15	5
2	5	16	5
3	0	17	0
4	5	18	5
5	5	19	5
6	5	20	5
7	5	21	0
8	0	22	5
9	0	23	0
10	0	24	0
11	5	25	5
12	5	26	5
13	0	27	5
14	0	28	5

IC401 (PD2026A) * 6

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	0	16	0
3	4.5	17	4.5
4	5	18	0
5	2.2	19	1.6
6	2.4	20	5
7	0	21	5
8	0	22	5
9	2.4	23	5
10	2.2	24	5
11	5	25	2.5
12	0	26	2.5
13	2.3	27	2.5
14	2.4	28	4.5

IC60 * 7 (M51957AL)

Pin No.	Voltage
1	5
2	1.6
3	0
4	1.25
5	5

SERVO MECHANISM ASSEMBLY M

PICKUP ASSEMBLY
PEA1030

CN101

FOCUS COIL

TRACKING COIL

VR1 3.3K LD POWER

MD LD

1/16

INSIDE SW
DGS1014

SPDL MTR ASSEMBLY
PEA1028

CARRIAGE MTR
PXM1013

CN202

CN204

LOADING POSITION
(LPS1, 2)

PXM1002

LOADING MTR

SENSOR BOARD ASSEMBLY

KRK 6794V0△

PWM1384

MECHANISM BOARD ASSEMBLY

PWM1383-

KRK 6794V0△

POWER SUPPLY SECTION FOR SD TYPE

LINE VOLTAGE SELECTOR

110V 120-127V 220V 240V

AC110V,120-127V
220V,240V
50/60Hz

NEUTRAL LINE

POWER TRANSFORMER

NOTE:As to the power supply section for HEM and HPW types, refer to page 86.

MAIN BOAR
(PWZ2057:K
(PWZ2058:H
(PWZ2060:H
(PWZ2059:S

AC120V
60Hz

PRIMARY

CN205

EJECT MTR

CN206

DISC SELECT MTR

CN201(TP1) VR151 VR152 VR102 VR103

IC201 IC202 IC151 IC101 Q101

SERVO BOARD ASSEMBLY (PWZ2087:KU, KC TYPES)
(PWZ2085:HEM TYPE)
(PWZ2088:HPW, SD TYPES)

MAIN BOARD ASSEMBLY
(PWZ2057:KU,KC TYPES)
(PWZ2058:HEM TYPE)
(PWZ2060:HPW TYPE)
(PWZ2059:SD TYPE)

KU, KC, SD, HPW TYPES ONLY

CONTROL OUT IN

CD·DECK SYNCHRO

KU, KC, SD, HPW TYPES ONLY

LINE OUT

PRIMARY

NEUTRAL LIVE

⚠ POWER TRANSFORMER

Q391

Q405
Q404 Q403
Q406 IC406
Q414 Q413

Q410 Q407

IC404

Q51
Q411

IC401

IC13
IC11
IC12

IC301

PWM
1400-
1401-
1402-
1403-
1404-

KU, KC, SD, HPW TYPES ONLY
IC203
Q352

HEM TYPE ONLY
IC351

IC352
Q409

KU, KC, SD, HPW TYPES ONLY
IC60 Q354
Q355 Q351
Q356 Q353

POWER SWITCH BOARD ASSEMBLY

PWZ2084

STANDBY

TIMER START SV

IC801

REMOTE SENSOR

SUB FUNCTION BOARD ASSEMBLY

PWZ2089
2093

EJECT1
EJECT2
EJECT3

HEADPHONE BOARD ASSEMBLY

PWZ2090
2091

PHONES LEVEL VR501

PHONES

FUNCTION BOARD ASSEMBLY (PWZ2081)

PWZ2081
2092

DISC 1 DISC 2 DISC 3 DISC 4 DISC 5 DISC 6

PROGRAM DELETE COMPU PGM TIME FADE REPEAT TIME

FADER IN FADER OUT MANUAL SEARCH TRACK SEARCH

RANDOM PLAY HI-LITE SCAN STOP PAUSE PLAY

A.D.L.C

This P.C.B. connection diagram is viewed from the foil side.

MAIN BOARD ASSEMBLY
(PWM22027:KU,KC TYPES)
(PWM22028:HEM TYPE)
(PWM22080:WHM TYPE)
(PWM22029:SD TYPE)

CONTROL
OUT — TYPES ONLY — KU, KC, SD, WHM
IN

SYNCHRO
CD-DECK
OUT
LINE
TYPES ONLY
KU, KC, SD, WHM

POWER TRANSFORMER

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POWER SWITCH BOARD ASSEMBLY
REMOTE SENSOR
TIMER START LED
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FUNCTION BOARD ASSEMBLY (PWM22081)
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HEADPHONE BOARD ASSEMBLY
PWM22080
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SERVO BOARD ASSEMBLY (PWZZ5080:KU, KC TYPES)
(PWZZ5080:HEM TYPE)
(PWZZ5080:WHM, SD TYPES)

SENSOR BOARD ASSEMBLY

SERVO MECHANISM ASSEMBLY M

PICKUP ASSEMBLY
PEA1030

MECHANISM BOARD ASSEMBLY

POWER SUPPLY SECTION FOR SD TYPE

MAIN BOARD
(PWZZ5027)
(PWZZ5028)
(PWZZ5060)
(PWZZ5029)

NOTE: As to the power supply section,
refer to page 88.
for HEM and WHM types.

6. P. C. B's PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
MECHANISM BOARD ASSEMBLY			
SWITCHES			
	S951, 952	PUSH SWITCH (EJS2, EJS1)	DSG1016
	S953	PUSH SWITCH (LCD1)	DSG1015
	S954, 955	LEVER SWITCH (SIN1, SIN2)	RSK1003
	S956	PUSH SWITCH (LCD2)	DSG1015
	S957	LEVER SWITCH (SIN3)	RSK1003
	S958	PUSH SWITCH (LCD3)	DSG1015
SENSOR BOARD ASSEMBLY			
SEMICONDUCTOR			
	Q901		GP1A52HR
SWITCH			
	S901	PUSH SWITCH (UP LIMIT)	DSG1016
CAPACITOR			
	C901	ELECTROLYTIC CAPACIT	CEJA100M16
RESISTORS			
	R901	CARBON FILM RESISTOR	RD1/6PM103J
	R902	CARBON FILM RESISTOR	RD1/6PM471J
◉ MAIN BOARD ASSEMBLY(PWZ2057)			
SEMICONDUCTORS			
⚠	IC11	IC	LM2940CT-5.0
⚠	IC12	REGULATOR IC	NJM79M05FA
⚠	IC13	IC	LM2940CT-5.0
⚠	IC203	POWER OP-AMP, IC	LA6517
	IC301	EFM DEMODULATION IC	CXD2500Q
	IC351	MICROCOMPUTER, IC	PD4326A
	IC352	C-MOSIC	LC7800
	IC401	D/A CONVERTER, IC	PD2026A
	IC404	OP-AMP IC	NJM4558D-D
	IC406	OP-AMP IC	BA15218
	IC60	SYSTEM RESET IC	M51957AL
	Q351	TRANSISTOR	2SC1740S
	Q352	TRANSISTOR	DTA124ES
	Q353-356	TRANSISTOR	2SC1740S
	Q391	TRANSISTOR	DTC124ES
	Q403, 404	TRANSISTOR	2SD2144S
	Q405	TRANSISTOR	DTC124ES
	Q406, 407	TRANSISTOR	2SB1296
	Q409-411	TRANSISTOR	DTA124ES
	Q413, 414	TRANSISTOR	2SD2144S
⚠	Q51	TRANSISTOR	2SA933S
⚠	D21-24	DIODE	11ES2
	D301, 351	DIODE	1SS254
	D391-399	DIODE	1SS254
	D401-406	DIODE	1SS254
⚠	D52	DIODE	11ES2
⚠	D53	ZENER DIODE	MTZ30B
⚠	D54	ZENER DIODE	MTZ6.2B
COILS			
	L11	RADIAL INDUCTOR	LFA010K
	L12	FERRITE BEAD	VTH1013
	L391, 392	AXIAL COIL	LAUR22K
	L393, 394	AXIAL INDUCTOR	LAU010K
	L401, 402	AXIAL INDUCTOR	LAU010K
CAPACITORS			
	C11-14	CERAMIC CAPACITOR	CKCYF103Z50
	C21, 22	ELECTR. CAPACITOR	CEAS222M16
	C23, 24	ELECTR. CAPACITOR	CEAS102M16
	C25	ELECTR. CAPACITOR	CEAS471M10
	C26	CERAMIC CAPACITOR	CKCYF103Z50
	C301	MYLOR FILM CAPACITOR	CQMA104K50
	C302	ELECTR. CAPACITOR	CEAS470M50
	C303	ELECTR. CAPACITOR	CEAS101M10
	C306	CERAMIC CAPACITOR	CKCYB152K50
	C307	MYLOR FILM CAPACITOR	CQMA473J50
	C308, 311	MYLOR FILM CAPACITOR	CQMA103K50
	C352	ELECTR. CAPACITOR	CEAS330M16
	C354	ELECTR. CAPACITOR	CEAS101M10
	C355	MYLOR FILM CAPACITOR	CQMA104K50
	C356	ELECTR. CAPACITOR	CEAS471M6R3
	C357	CERAMIC CAPACITOR	CKCYF103Z50
	C401	CERAMIC CAPACITOR	CCCCH150J50
	C402	CERAMIC CAPACITOR	CCCCH330J50
	C409	CERAMIC CAPACITOR	CKCYF103Z50
	C410-413	CERAMIC CAPACITOR	CCCCH470J50
	C414-417	CERAMIC CAPACITOR	CCCCH270J50
	C418, 419	ELECTR. CAPACITOR	CEAS470M50
	C420, 421	MYLOR FILM CAPACITOR	CQMA102J50
	C422, 423	ELECTR. CAPACITOR	CEAS010M50

Mark	No.	Description	Part No.
	C431, 432	ELECTR. CAPACITOR	CEAS330M16
	C441	MYLOR FILM CAPACITOR	CQMA104K50
	C442	MYLOR FILM CAPACITOR	CQMA103K50
	C447	MYLOR FILM CAPACITOR	CQMA104K50
	C448	MYLOR FILM CAPACITOR	CQMA103K50
	C450	MYLOR FILM CAPACITOR	CQMA104K50
	C52	ELECTR. CAPACITOR	CEAS101M50
	C53, 54	ELECTR. CAPACITOR	CEAS470M50
	C61	ELECTR. CAPACITOR	CEASR33M50
	C62	ELECTR. CAPACITOR	CEAS2R2M50
RESISTORS			
	All resistors		RD1/6PM□□□J
OTHERS			
	CN301	CONNECTOR	HLEM22S-1
	CN302	CONNECTOR	HLEM9S-1
	CN351	CONNECTOR	HLEM36S-1
	JA391, 392	JACK (CONTROL IN, OUT)	RKN1004
	JA393	JACK (CD•DECK CYNCHRO)	PKN1005
	JA401	JACK (LINE OUT L, R)	PKB1009
	X351	CERAMIC RESONATOR (4.19MHz)	VSS1014
	X401	XTAL RES (OSC) (16.9344MHz)	PSS1006

POWER SWITCH BOARD ASSEMBLY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	Q801	TRANSISTOR	DTA124ES
	D801	LED	SLH-56VC3H-S
SWITCHES			
	S801	TACT SWITCH (POWER (STANDBY))	PSG1006
	S802	SLIDE SWITCH (TIMER (STANDBY/ON))	RSH1017
RESISTORS			
	R801	CARBON FILM RESISTOR	RD1/6PM331J
	R802	CARBON FILM RESISTOR	RD1/6PM103J
OTHERS			
		REMOTE SENSOR	HC-177

◉ SERVO BOARD ASSEMBLY(PWZ2087)

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	IC101	PRE AMP IC	CXA1471S
	IC151	SERVO IC	CXA1372S
⚠	IC201	POWER OP-AMP, IC	LA6517
⚠	IC202	POWER OP-AMP, IC	LA6520
	Q101	TRANSISTOR	2SA854S
	DZ11	ZENNER DIODE	MTZJ6.2B
CAPACITORS			
	C101, 102	ELECTR. CAPACITOR	CEAS101M10
	C104	ELECTR. CAPACITOR	CEAS101M10
	C110	CERAMIC CAPACITOR	CKCYF103Z50
	C125	CERAMIC CAPACITOR	CCCCH200J50
	C151-154	ELECTR. CAPACITOR	CEAS101M10

Mark	No.	Description	Part No.
	C155	MYLOR FILM CAPACITOR	CQMA182J50
	C156	MYLOR FILM CAPACITOR	CQMA333K50
	C157	MYLOR FILM CAPACITOR	CQMA103K50
	C158, 159	MYLOR FILM CAPACITOR	CQMA104K50
	C160	ELECTR. CAPACITOR	CEAS4R7M50
	C161	MYLOR FILM CAPACITOR	CQMA104K50
	C162	ELECTR. CAPACITOR	CEAS010M50
	C163	MYLOR FILM CAPACITOR	CQMA104K50
	C164	MYLOR FILM CAPACITOR	CQMA103K50
	C165	ELECTR. CAPACITOR	CEAS330M16
	C168	MYLOR FILM CAPACITOR	CQMA333K50
	C169	MYLOR FILM CAPACITOR	CQMA103K50
	C170	MYLOR FILM CAPACITOR	CQMA332J50
	C171, 172	MYLOR FILM CAPACITOR	CQMA472J50
	C173	ELECTR. CAPACITOR	CEASR47M50
	C202	CERAMIC CAPACITOR	CKCYF103Z50
	C211	MYLOR FILM CAPACITOR	CQMA103K50
RESISTORS			
	VR102	VR (22kΩ)	VRTB6HS223
	VR103	VR (1kΩ)	VRTB6HS102
	VR151, 152	VR (22kΩ)	VRTB6HS223
	Other resistors		RD1/6PM□□□J
OTHERS			
	CN101	CONNECTOR	5597-16APB
	CN208	CONNECTOR	HLEM22S-1
	CN209	CONNECTOR	HLEM9S-1

◉ FUNCTION BOARD ASSEMBLY (PWZ2081)

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	D701-712	DIODE	1SS254
SWITCHES			
	S703	TACT SWITCH (ADLC)	PSG1006
	S705-722	TACT SWITCH (PROGRAM, DISC NUMBER (4-6), DELETE, TRACK NUMBER (4, 5, 9, 10, +10, ≧20), COMPU PGM, TIME FADE, REPEAT, TRACK SEARCH (⏮, ⏭), TIME, PLAY (◁))	PSG1006
	S725-744	TACT SWITCH (PAUSE (▯▯), STOP (□), HI-LITE SCAN, RANDOM PLAY, MANUAL SEARCH (◁◁, ▷▷), AUTO FADER (OUT ⌝, IN ⌜), TRACK NUMBER (1-3, 6-8), MAGAZINE (1-3), DISC NUMBER (1-3))	PSG1006
RESISTORS			
	R701-704	CARBON FILM RESISTOR	RD1/6PM103J
OTHERS			
	CN701	CONNECTOR	HLEM36R-1
	V701	FL INDICATOR TUBE	PEL1056

Mark	No.	Description	Part No.

SUB FUNCTION BOARD ASSEMBLY

Mark	No.	Description	Part No.
SWITCHES			
	S845-847	TACT SWITCH (EJECT (⏏) MAGAZINE 1-3)	PSG1006

HEADPHONE BOARD ASSEMBLY

Mark	No.	Description	Part No.
CAPACITORS			
	C501	CERAMIC CAPACITOR	CKCYF223Z50
	C502, 503	CERAMIC CAPACITOR	CKPUYB102K50
RESISTORS			
	VR501	VARIABLE RESISTOR (PHONES LEVEL)	PCS1003
	R501, 502	CARBON FILM RESISTOR	RD1/6PM470J
COILS			
	L501-503	AXIAL INDUCTOR	LAU010K
OTHERS			
	JA501	JACK (PHONES)	RKN1002

Mark	No.	Description	Part No.

7. IC INFORMATION

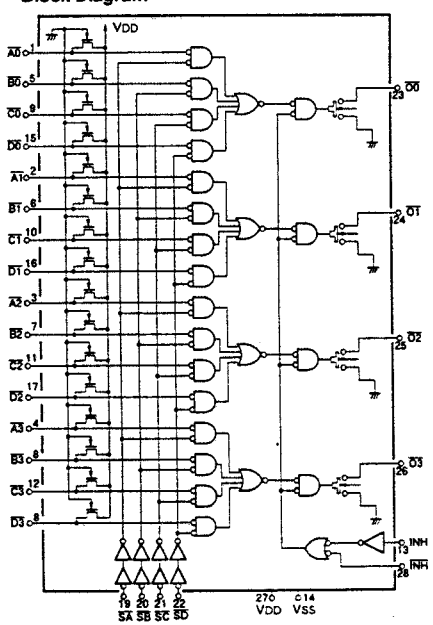
■ LC7800

EXPANDER IC

• Pin Function

No	Pin Name	I/O	Function
1	$\overline{A0}$	I	Data input terminals with pull-up resistor. "H"=Normal, "L"=Active
2	$\overline{A1}$		
3	$\overline{A2}$		
4	$\overline{A3}$		
5	$\overline{B0}$		
6	$\overline{B1}$		
7	$\overline{B2}$		
8	$\overline{B3}$		
9	$\overline{C0}$		
10	$\overline{C1}$		
11	$\overline{C2}$		
12	$\overline{C3}$		
13	INH	I	Inhibit input the input terminal signal TRUE type so that the output transistor becomes OFF. TRUE: If input "H"level to INH, output transistor becomes OFF. Connect to ground.
14	Vss	–	Ground.
15	$\overline{D0}$	I	Data input terminals with pull-up resistor. "H"=Normal, "L"=Active
16	$\overline{D1}$		
17	$\overline{D2}$		
18	$\overline{D3}$		
19	$\overline{SA}$	I	Data select input terminals. Input the signal which is selected one pair of the four data input signals ($\overline{A0}$–$\overline{A3}$, $\overline{B0}$–$\overline{B3}$, $\overline{C0}$–$\overline{C3}$ and $\overline{D0}$–$\overline{D3}$). namely, if $\overline{SA}$ is "L"level, select $\overline{A0}$–$\overline{A3}$, if $\overline{SB}$ is "L"level, select $\overline{B0}$–$\overline{B3}$, if $\overline{SC}$ is "L"level, select $\overline{C0}$–$\overline{C3}$, and if $\overline{SD}$ is "L"level, select $\overline{D0}$–$\overline{D3}$. L=Active. Output transistor will be offed when any terminals are not selected.
20	$\overline{SB}$		
21	$\overline{SC}$		
22	$\overline{SD}$		
23	$\overline{O0}$	O	Data output terminals. Output the one pair of the four data which is selected by data select input. Open drain output of Nch Mos.
24	$\overline{O1}$		
25	$\overline{O2}$		
26	$\overline{O3}$		
27	VDD	–	+5V power supply voltage.
28	$\overline{INH}$	I	Inhibit input terminal. Input the BAR type signal so that the output transistor becomes OFF. BAR: If input "L"level to $\overline{INH}$, output transistor becomes OFF.

• Block Diagram



• Truth Table

Input																Output			
DATA input												Select input				Inhibit input				
A				B				C				D								
A0	A1	A2	A3	B0	B1	B2	B3	C0	C1	C2	C3	D0	D1	D2	D3	SA	SB	SC	SD	INH	$\overline{INH}$	$\overline{O0}$	$\overline{O1}$	$\overline{O2}$	$\overline{O3}$
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1
1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1
1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1
1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0
1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1
1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1
1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0
1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1
1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1
1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1
1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	1	0	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1	0	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	0	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	1	1	1	0
★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	1	★	1	1	1	1
★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	0	1	1	1	1

Note: 1:[H]level/ 0:[L]level ★:don't care

PD-TM1

8. ADJUSTMENTS

8.1 HEIGHT ADJUSTMENT OF THE SENSOR PLATE

1. Adjust screw Ⓐ until the top of the sensor plate is 7mm above the main chassis. (Figure 8-1)
2. Activate TEST MODE. (See page 36.)
3. Insert the CD magazine into the Opening of MAGAZINE 3.
   (The tray for DISC 1 is automatically loaded.)
4. Press DISC 6 of the DISC NUMBER buttons twice in succession. (The tray for DISC 6 is loaded.)
5. Remove CN206 to fix the DISC SELECT motor.
   (For the location of CN206, see figure 1 on page 36.)
6. Press DISC 1 of the DISC NUMBER buttons twice in succession. (The turn drive lever stops at the loading start position.)
7. Check that the upper side of the turn drive lever is 0mm $^{+0mm}_{-0.2mm}$ above the top of the DISC 6 tray (tray 6).
   (Figure 8-1, MAGAZINE 3)
8. When the check is completed, connect CN206.
   (at least 15 seconds after step 6 is completed)
   - If the upper side position of the turn drive lever is slanted upward to the plus direction, turn screw Ⓐ clockwise to fine-adjust the sensor plate mounting position downward.
   - After readjusting screw Ⓐ, press the STOP(□) button and repeat steps 4 through 6.
   - If the upper side position of the turn drive lever is slanted downward to the minus direction, turn screw Ⓐ counterclockwise. Then press the STOP(□) button and repeat steps 4 through 6.
9. Eject the CD magazine by pressing the MAGAZINE 3 EJECT(⏏) button.
10. Insert the CD magazine into the Opening of MAGAZINE 1.
    (The tray for DISC 1 is automatically loaded.)
11. Press DISC 6 of the DISC NUMBER buttons twice in succession. (The tray for DISC 6 is loaded.)
12. Remove CN206 to lock the DISC SELECT motor.
    (For the location of CN206, see figure 1 on page 36.)
13. Press DISC 1 of the DISC NUMBER buttons twice in succession. (The turn drive lever stops at the loading start position.)
14. Check that the upper side of the turn drive lever is 0mm $^{+0.2mm}_{-0.6mm}$ above the top of the DISC 6 tray (tray 6).
    (Figure 8-1, MAGAZINE 1)
15. When the check is completed, connect CN206.
    (at least 15 seconds after step 13 is completed.)
16. Eject the CD magazine by pressing the MAGAZINE 1 EJECT(⏏) button.
    Insert the CD magazine in the opening of MAGAZINE 2 and perform the same check for MAGAZINE 2 as for MAGAZINE 1.

Note: In disc selection, the servo mechanism section moves vertically. This servo mechanism section is designed to reduce the elevation speed at the position of the tray preceding the specified tray of the disc. This permits the elevation movement to be stopped exactly at specified disc tray.

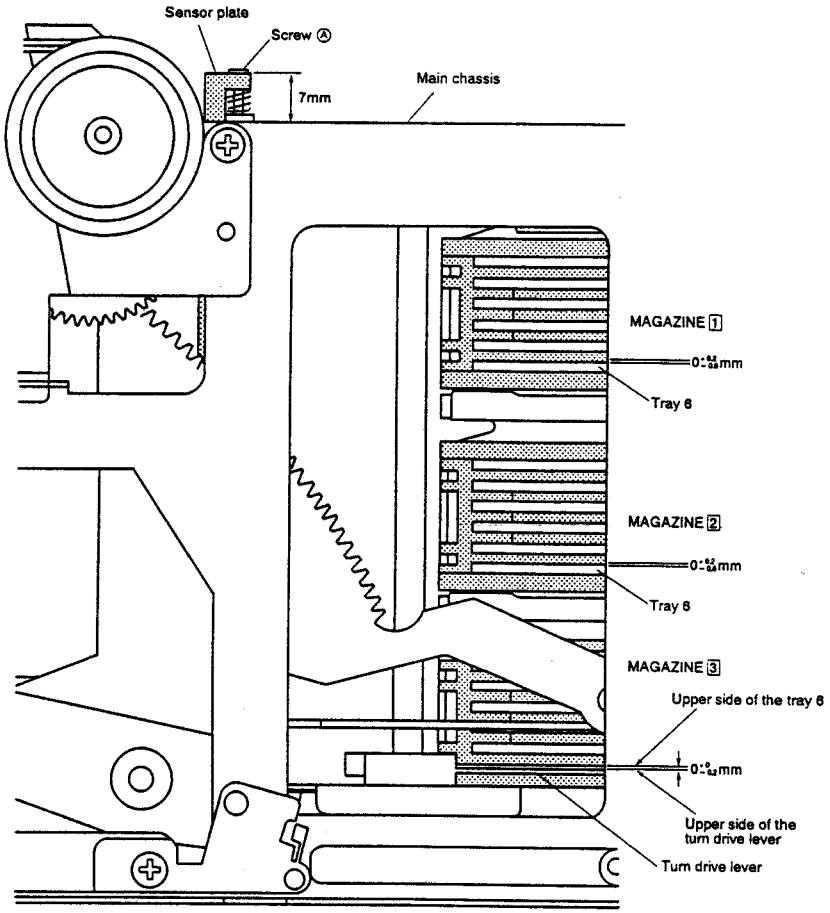


Figure. 8-1

8.2 CD PLAYER ADJUSTMENTS

Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

Note: Store the test disc in disc 1 position in a CD magazine.
Insert the CD magazine into MAGAZINE [3].
Do not insert the CD magazine into either MAGAZINE [1] or [2].

● Adjustment Items/Verification Items and Order

Step	Item	Test Point	Adjustment Location
1	Focus offset adjustment	TP1, Pin 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Grating adjustment	TP1, Pin 2 (TRK. ERR)	Grating adjustment slit
3	Tracking error balance adjustment	TP1, Pin 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
5	RF level adjustment	TP1, Pin 1 (RF)	VR1 (RF level)
6	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Focus error signal verification	TP1, Pin 6 (FCS. ERR)	———

● **Abbreviation table**

FCS. ERR :Focus Error
FCS. OFS :Focus Offset
TRK. ERR :Tracking Error
TRK. BAL :Tracking Balance
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring Instruments and Tools

1. Dual trance oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low-pass filter (39 kΩ + 0.001 μF)
5. Resistor (100 kΩ)
6. Standard tools

● Test Point and Adjustment Variable Resistor Positions

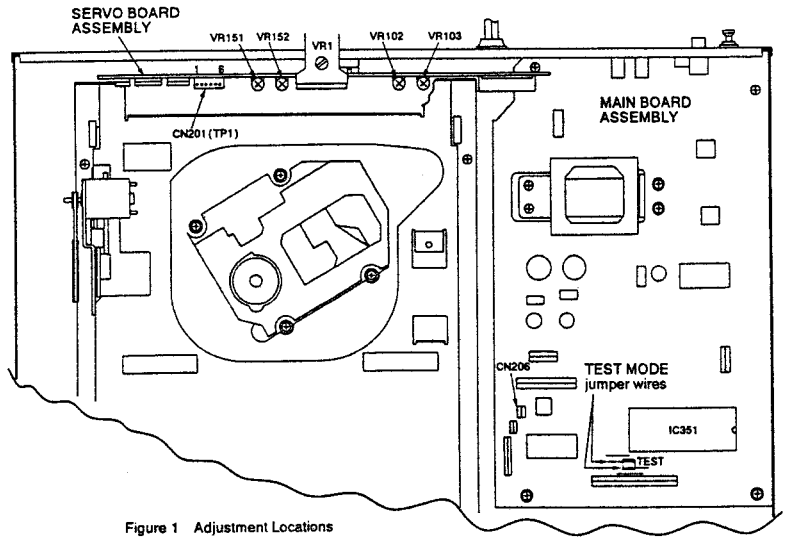


Figure 1 Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on.
If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	PROGRAM	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised twice and returned to its original position.
▷	PLAY	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
□□	PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function In Test Mode	Explanation
◁◁	MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▷▷	MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
⏏	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note:

- When inserting the CD magazine, disc 1 of the magazine is loaded automatically.
- DISC NUMBER buttons (DISC 1 - DISC 6) and MAGAZINE buttons (M1 - M3) function properly on test mode conditions.
  If it does not function, when you press the DISC NUMBER button once, press the same button twice more.
  When a CD magazine is inserted into MAGAZINE [1], pressing any of DISC NUMBER buttons (DISC 1 - DISC 6) selects the disc in MAGAZINE [1].

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

PROGRAM — Lights up the laser diode and closes the focus servo.
⇩
PLAY ▷ — Starts the spindle motor and closes the spindle servo.
⇩
PAUSE ▯▯ — Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Adjustment

• Objective	Sets the DC offset for the focus error amp.		
• Symptom when out of adjustment	The model does not focus in and the RF signal is dirty.		
• Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) [Settings] 5 mV/division 10 ms/division DC mode	• Player state • Adjustment location • Disc	Test mode, stopped (just the Power switch on) VR103 (FCS. OFS) None needed

[Procedure]

Adjust VR103 (FCS. OFS) so that the DC voltage at TP1, Pin 6 (FCS. ERR) is -150 ± 50 mV.

2. Grating Adjustment

• Objective	To align the tracking error generation laser beam spots to the optimum angle on the track.		
• Symptom when out of adjustment	Play does not start, track search is impossible, tracks are skipped.		
• Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR) via a low pass filter. (See Figure 2) [Settings] 50 mV/division 5 ms/division DC mode	• Player state • Adjustment location • Disc	Test mode, focus and spindle servos closed and tracking servo open Pickup grating adjustment slit YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key.
2. Press the PROGRAM key, then the PLAY ▷ key in that order to close the focus servo then the spindle servo.
3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again. Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.
   Reference : Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

   Note : The amplitude of the tracking error signal is about 3 Vp-p (when a 39 kΩ + 0.001 μF low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.
5. Return the pickup to more or less midway across the disc with the MANUAL SEARCH REV ◁◁ key, press the PAUSE ▯▯ key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

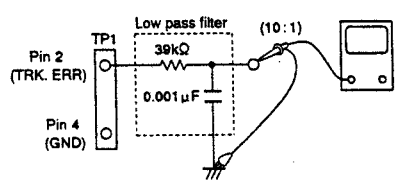
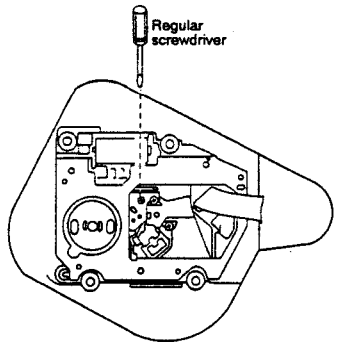


Figure 2



Adjustment locations

[How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1, Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which the envelope of the waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)
This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

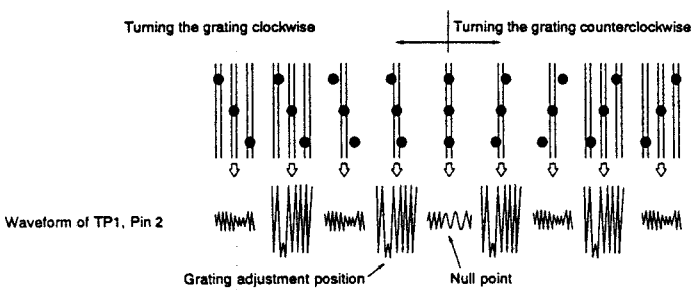
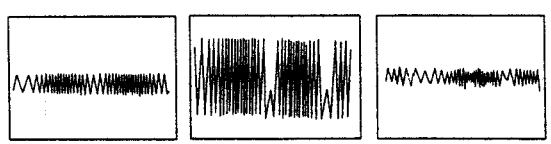


Figure 3



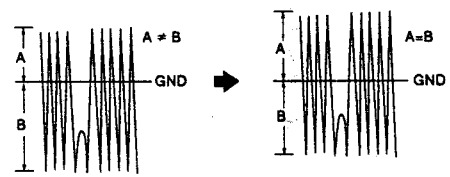
Null point waveform | Maximum amplitude waveform | Waveform other than the null point

3. Tracking Error Balance Adjustment

● Objective	To correct for the variation in the sensitivity of the tracking photodiode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open VR102 (TRK. BAL) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key.
2. Press the PROGRAM key, then the PLAY ▷ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR102 (TRK. BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP1, Pin 2 (TRK. ERR) are the same (in other words, so that there is no DC component).



When there is a DC component | When there is no DC component

4. Pickup Radial/Tangential Tilt Adjustment

● Objective ● Symptom when out of adjustment	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals. Sound broken;some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35mm). Press the PROGRAM key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the focus servo then the spindle servo and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 5).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.

Note:Radial and tangential mean the directions relative to the disc shown in Figure 4.

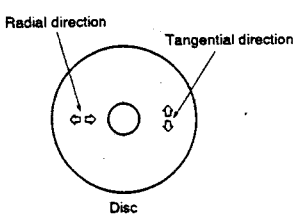
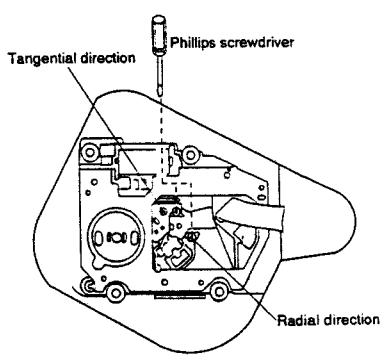


Figure 4



Adjustment locations

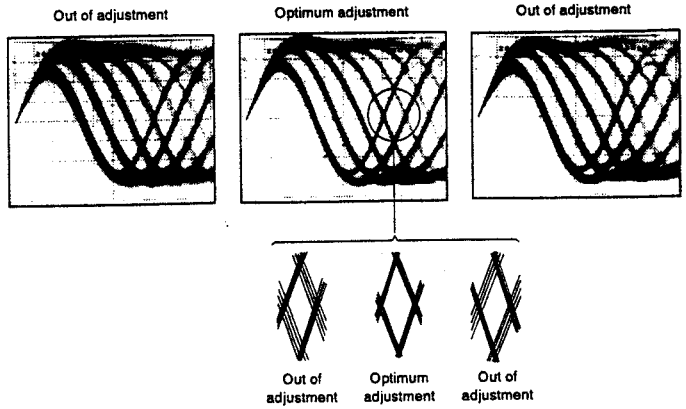


Figure 5 Eye pattern

5. RF Level Adjustment

● Objective	To optimize the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play VR1 (laser power) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key, then press the PROGRAM key, then the PLAY ▷ key in that order to close the respective servos and put the player into play mode.
2. Adjust VR1 (laser power) so that the RF signal amplitude is 1.2 Vp-p ± 0.1 V.

6. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 6. [Settings] CH1 20 mV/division CH2 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR152 (FCS. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

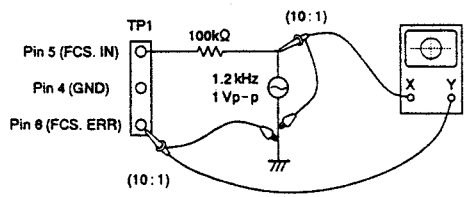
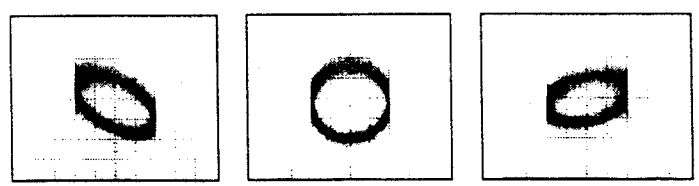


Figure 6

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

7. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 7. [Settings] CH1 CH2 50 mV/division 50 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

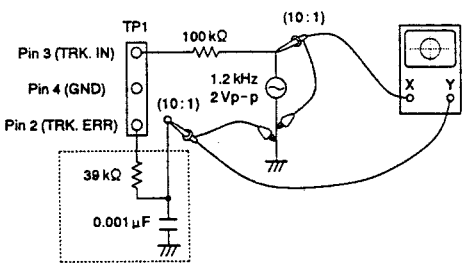
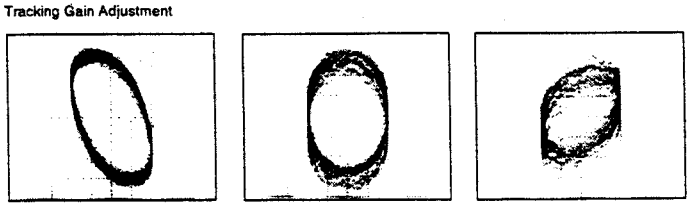


Figure 7

Tracking Gain Adjustment



Higher gain | Optimum gain | Lower gain

8. Focus Error Signal (Focus S Curve) Verification

● Objective	To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the waveform for the focus error signal.		
● Symptom when out of adjustment			
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR). [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stop None YEDS-7

[Procedure]

1. Connect TP1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the PROGRAM key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PROGRAM key is pressed, press this key over and over until you have checked the waveform.

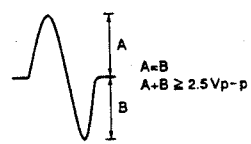


Figure 8

[Judging the pickup]

Do not judge the pickup until all the adjustment have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2 : 1 ratio or more).
4. The RF signal is too small (less than 0.8 Vp-p) and even if VR1 (laser power) is adjusted , the RF signal can not be brought up to the standard level.

9. FOR KC, HEM, HPW AND SD TYPES

NOTES:
- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

9.1 CONTRAST OF MISCELLANEOUS PARTS

The KC, HEM, HPW and SD types are the same as the KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.					Remarks
		KU type	KC type	HEM type	HPW type	SD type	
◉	Main board assembly	PWZ2057	PWZ2057	PWZ2058	PWZ2060	PWZ2059	
◉	Servo board assembly	PWZ2087	PWZ2087	PWZ2085	PWZ2088	PWZ2088	
	Headphone board assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
⚠	Strain relief	CM-22C	CM-22C	CM-22B	CM-22B	CM-22B	
⚠	AC power cord	PDG1015	PDG1015	PDG1003	PDG1006	PDG1013	
⚠	Power transformer(AC120V)	PTT1175	PTT1175	·····	·····	·····	
⚠	Power transformer (AC110V, 120-127V, 220V, 240V)	·····	·····	·····	·····	PTT1177	
⚠	Power transformer (AC220-230V, 230-240V)	·····	·····	PTT1176	PTT1176	·····	
⚠	Line voltage selector (AC110V, 120-127V, 220V, 240V)	·····	·····	·····	·····	PSB1002	
	Connection cord with mini plug	PDE-319	PDE-319	·····	·····	·····	
	CD packing case	PHG1631	PHG1669	PHG1689	PHG1689	PHG1689	For packing
	Dry cell battery(R03, AAA)	Non supply	Non supply	·····	·····	·····	
	Magazine assembly(RED)	PXA1373	PXA1373	·····	·····	·····	
	Magazine assembly(BLUE)	PXA1374	PXA1374	·····	·····	·····	
	Magazine assembly(WHITE)	PXA1375	PXA1375	·····	·····	·····	
	Magazine assembly	·····	·····	PXA1308	PXA1308	PXA1308	
	Display window	PAM1474	PAM1474	PAM1512	PAM1474	PAM1474	
	Operating instructions(English)	PRB1146	PRB1146	·····	PRB1146	PRB1146	
	Operating instructions(French)	·····	PRC1036	·····	·····	·····	
	Operating instructions(Spanish)	·····	·····	·····	·····	PRC1032	
	Operating instructions (English/French/German/Italian)	·····	·····	PRE1147	·····	·····	
	Operating instructions (Dutch/Swedish/Spanish/Portuguese)	·····	·····	PRF1046	·····	·····	

MAIN BOARD ASSEMBLY

The main board assemblies (PWZ2058, PWZ2059 and PWZ2060) are the same as the main board assembly (PWZ2057) with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		PWZ2057	PWZ2058	PWZ2059	PWZ2060	
	D391-D394	1SS254	·····	1SS254	1SS254	
	L391, L392	LAUR22K	·····	LAUR22K	LAUR22K	
	R391	RD1/6PM244J	·····	RD1/6PM244J	RD1/6PM244J	
	R392	RD1/6PM102J	·····	RD1/6PM102J	RD1/6PM102J	
	JA391, JA392 JACK(CONTROL IN, OUT)	RKN1004	·····	RKN1004	RKN1004	

SERVO BOARD ASSEMBLY

The servo board assemblies (PWZ2085 and PWZ2088) are the same as the servo board assembly (PWZ2087) for the service supply parts.

HEADPHONE BOARD ASSEMBLY

The headphone board assemblies (HEM and HPW types) are the same as the headphone board assemblies (KU, KC and SD types) for the service supply parts.

9.2 LINE VOLTAGE SELECTION FOR THE HEM AND HPW TYPES

Line voltage can be changed with following steps

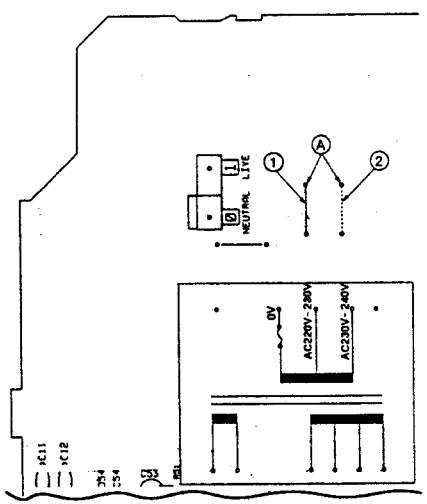
1. Disconnect the AC power cord.
2. Remove the bonnet.
3. Change the position of the jumper Ⓐ as follows.

Voltage	Jumper Ⓐ position
220V-230V	①
230V-240V	②

4. Stick the line voltage label on the rear panel.

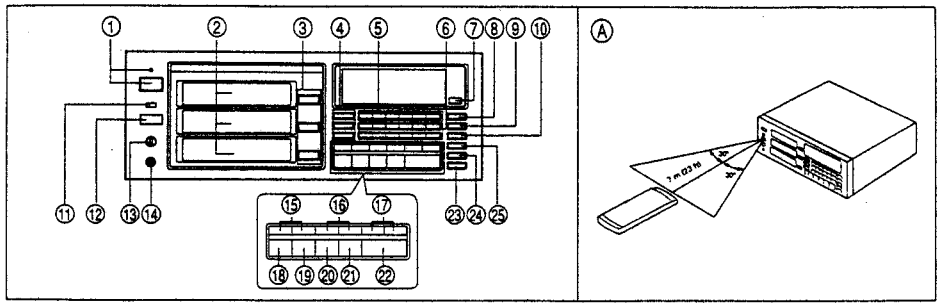
Description	Part No.
220V label	AAX-193
240V label	AAX-192

MAIN BOARD ASSEMBLY
(PWZ2058:HEM TYPE)
(PWZ2060:HPW TYPE)



10. PANEL FACILITIES

FRONT PANEL



① POWER STANDBY/ON switch and STANDBY indicator
② Magazine insertion slots
③ Eject buttons (⏏)
(MAGAZINE [1] – MAGAZINE [3])
④ MAGAZINE buttons (M1 – M3)
⑤ DISC NUMBER buttons (DISC 1 – DISC 6)
⑥ TRACK NUMBER/Digit buttons
(1-10, +10, ≧ 20)
⑦ ADLC button
⑧ PROGRAM button
⑨ DELETE button
⑩ COMPU PGM EDIT button
⑪ TIMER switch
⑫ Remote sensor
Receives the signal from the remote control unit.
⑬ Headphones volume (PHONES LEVEL)
⑭ Headphones jack (PHONES)
⑮ AUTO FADER buttons (◜ / ◝)
⑯ MANUAL SEARCH buttons (◀◀/▶▶)
⑰ TRACK SEARCH buttons (I◀◀/▶▶I)
⑱ RANDOM PLAY button
⑲ HI-LITE SCAN button
⑳ STOP button (■)
㉑ PAUSE button (II)
㉒ PLAY button (▶)
㉓ TIME button
㉔ REPEAT button
㉕ TIME FADE EDIT button

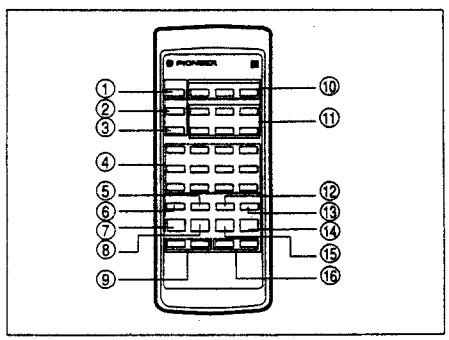
Ⓐ REMOTE CONTROL OPERATIONS

When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.

NOTE:

- *If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.*

REMOTE CONTROL UNIT



Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

① POWER button
② ADLC button
③ HI-LITE SCAN button
④ TRACK NUMBER/Digit buttons (1-10, +10, ≧ 20)
⑤ CHECK button
⑥ PGM button
⑦ RANDOM PLAY button
⑧ STOP button (■)
⑨ OUTPUT LEVEL buttons (+/–)
⑩ MAGAZINE buttons (M1 - M3)
⑪ DISC NUMBER buttons (DISC 1 - DISC 6)
⑫ CLEAR button
⑬ DELETE button
⑭ PLAY button (▶)
⑮ PAUSE button (II)
⑯ TRACK search buttons (I◀◀ / ▶▶I)

11. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements
European models ..... AC 220 - 230 V, 50/60 Hz
U.K., Australian models ..... AC 230 • 240 V, 50/60 Hz
U.S., Canadian models ..... AC 120 V, 60 Hz
Other models ..... AC 110/120 - 127/220/240V (switchable) 50/60 Hz
Power consumption ..... 16 W
Operating temperature ..... +5°C - +35°C (+41°F - +95°F)
Weight ..... 6.8 kg (15 lb)
External dimensions ..... 420(W) X 328(D) X 176(H) mm 16-9/16(W) X12-15/16(D) X 6-15/16(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 102 dB or more (EIAJ)
Dynamic range ..... 96 dB or more (EIAJ)
Channel separation ..... 98 dB or more (EIAJ)
Harmonic distortion ..... 0.003 % or less (EIAJ)
Output voltage ..... 2.0 V
Wow and flutter ..... less than ±0.001% (W.PEAK) (below measurable level) (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Audio line output
Headphone jack with volume control
Control input/output jacks (Equipped with U.S. and Canadian models)
CD-DECK SYNCHRO jack

4. Functions

Number of discs to be stored - maximum 18.

Basic Operation Buttons
- PLAY, PAUSE, STOP

Search Function
- Magazine Search
- Disc Search
- Track Search
- Manual Search

Programming
- Maximum 48 steps
- Pause
- Program Check/Correction (remote control unit)
- Program Clear (single track or all tracks)
- Delete Play

Repeat Functions
- 1 Track Repeat
- All Discs Repeat
- Program Repeat
- Random Play Repeat
- Delete Play Repeat
- Delete Random Play Repeat
- Magazine Hi-Lite Scan Repeat

Random Play
- Random Play (repeat also available)
- Delete Random Play (repeat also available)

Switching Display
Time consumed, remaining time (track/disc), and total time

Timer Start

ADLC

Digital Level Controller
Volume control can be done.

One-touch Fade
Fade-in and fade-out possible.

Compu Program Editing
Selects the tracks for both sides of the tape within the specified time.

Time Fade Editing
Selects the tracks within the specified time. Playback stops with a fade-out.

Magazine Hi-Lite Scan (repeat also available)
- DISC SCAN
- TRACK SCAN

Power On/Off (remote control unit)

Automatic Power On Function

Power Down Eject Function

5. Display

FL Tube Display
- PLAY indicator
- PAUSE indicator
- FADER indicator
- SCAN indicator
- Elapsed Time Display (min, sec)
- Remaining Time (track/disc) Display
- Total Time Display
- Magazine Number, Disc Number, Track Number
- Program Step Number
- Program Indicator
- Repeat Indicator
- Random Play Indicator
- ATT Level Display
- Time Fade Editing Indicator
- Compu Program Editing Indicator
- Delete Indicator
- Disc Symbol Indicators
- ADLC indicator

6. Accessories

- Remote control unit 1
- Size AAA/R03/dry batteries 2
- Six-compact-disc magazine 3
- Single-compact-disc magazine 1
- Output cord 1
- Control cord (U.S. and Canadian models only) 1
- Operating instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Multi-Play CD Players with mark and the Magazines with the same mark are compatible for 5-inch (12cm) discs.